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FOREWORD

Keying Procedures, Systems, and Nomenclature was first published in 1965, revised in 1969, 1975 and again in 1978. It introduced a procedural system of keying terminology radically different from that commonly used prior to 1965. The need for standard terminology was clear but the acceptance of the new system was slow.

Manufacturers, Distributors, Building Owners, and Operators were frustrated over the use of various and differing terms. Among those using the terms, different meanings and interpretations were applied. As a result, errors were made, and frequent correspondence occurred between manufacturers and distributors, seeking clarification. The consumer sometimes had a sketchy understanding of the key system he had purchased.

Since its inception, the procedures outlined in this manual have been taught at the DHI Technical Programs and the results have been gratifying. The use and understanding of the system is now close to industry wide, and the authors of the previous editions should take pride in the results.

There are still some misapplications and misunderstandings of the system and it is the purpose of this edition to clarify the system to avoid misunderstanding. With this in mind, text and format changes have been made with the aim of introducing criteria in their order of complexity, to make the manual an even better instructional tool for those progressing through basic, intermediate, and advanced study of the subject.

Since the manual does not cover actual keying procedures, the title of the manual has been changed. For those interested in the actual techniques of keying or the mathematics of setting up a key system, many fine books and publications are offered by the locksmithing industry.

Robert Perry, AHC/CDC
John R. "Jake" Dalbert, AHC
Richard Hudnut, DAHC

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CHAPTER 1

PLANNING A KEY SYSTEM

Hardware consultants render one of their most useful services by designing a practical and efficient keying system for a facility.

Because the principles of keying are not understood by those outside the field of locks, a consultant's services are most valuable in guiding the organization of keying so it will:

1. Function properly
2. Be easy to understand
3. Be practical enough to survive years of usage
4. Provide the security required by the user

BASIC FACTS OF KEY SYSTEMS

The following basic facts apply regardless of the manufacturer, type of cylinder, or key involved in the system:

Security is Inversely Proportional to Convenience

A cylinder operated by a single key is most secure. Each additional key operating the same cylinder increases the number of shear lines. This reduces the security of the cylinder by making it easier to pick or be opened by unauthorized keys.

Durability is Affected by the Level of Keying

A cylinder operated by a single key lasts longest. Each additional key operating the same cylinder requires more master pins of different increments. The number of master pins increase with each successive level of keying. This causes greater wear and increases the chances of malfunction of the cylinder.

There are Limitations

There are a limited number of change, master, and grand master keys that can be established within a keying system. This limitation is physical and mathematical in nature and exists within all systems. Systems designed to be expanded the least are generally the most secure. It is important to be realistic in establishing the degree of future expansion. (See Chapter 15 for a better understanding of a system's limitations).

Keys Relate to Each Other

The keys in a keying system relate to each other and to the system as a whole. This relationship restricts keying options and the flexibility of the system design.

Keep It Simple

The more complicated the design of the keying system, the shorter its usable life. Key a building to perform its function. Do not key it to individuals on an organization chart. Personnel/People relationships and organizations change rapidly. Building functions survive for many years. An Intricate system, misunderstood by the owner, usually degenerates quickly. The result is usually that everyone ends up with a master key.

Break Up Very Large Systems

It is unwise to tie too much together under one "top" master key. If the "top" key is compromised (loss, theft, duplication, decoding), the entire system must be rekeyed.

STEPS TO STRUCTURE A KEY SYSTEM

Research the Building Function

How, when, and by whom will it be used? Buildings are designed to serve a function. Study the function of the building, the flow of traffic, the purpose of various areas. Design the keying system to accomplish these purposes, Try to visualize the category of people by their function, the areas they must reach to perform their duties and the different times in a working day when these perform specific duties. Try to imagine where they must move, when and how. Remember also that a proper keying system is based on the building function, not personnel.

In most structures there are relative degrees of security to be considered in setting up the keying. Again, using a hospital illustration, narcotics lock-up and operating room facilities carry a high security classification. Security is partially achieved by greatly limiting the number of keys to an area and in some cases, limiting operation of a cylinder to a single change key, perhaps even a special high security cylinder.

In considering the function of a building, study how it relates to existing structures and plans for future structures. Keep building areas of the same function under the same keying hierarchy.

Prepare a Schematic Diagram of the Proposal

Suggest an appropriate keying system, based on building function.

Bring the study into focus and begin to diagram a concept of how the keying system will work. Like many things, real success comes in being able to simplify what would appear to be a complex system. It takes very little talent to make complex keying schedules.

Diagram the schedule, and look for every opportunity to use the same change key on as many doors as possible. Where doors have similar purpose and will be used by similar type people, key them alike.

As a first rule, use the lowest level of keying possible until the system forces you into a higher level. There will be many doors where logic tells you no change key will be used. In situations like this, it is appropriate to masterkey (no change keys) only.

Remember the limited availability of different change keys and use them sparingly. The owner will thank you in years to come as this will leave flexibility in the system. Minor additions and modifications can be made under these conditions without redoing the entire system.

Don't start out with a preconceived notion over the necessity of a great grand or grand masterkey. Build from the bottom up and let requirements dictate where it is appropriate to establish higher key levels. **Key the building and not the people.**

Do not be concerned if some people have to carry two or more keys. This is for more preferable than having a system where a key operates cylinders under different masterkeys. If uncontrolled crosskeying is permitted, it rapidly eliminates available change keys which must be discarded and not used in the system. Intricate systems can be made secure but more often than not, prove to be unnecessary and difficult to maintain.

Present the Proposal.

(See Chapter 14 for additional information about the Key Conference)

The Schematic diagram is the tool for selling the system.

Present the system to the owner's representative. It is most effective to use the alpha-numeric designation and the schematic charts as explained and illustrated in this booklet. Explain the concept of the function and traffic flow of the building as you have analyzed and conceived it. Typically, there will be attempts by the owner to introduce "people keying". Try to deal with these intelligently and discourage them whenever possible. Usually an owner can understand that people and their relationship to the building are temporary in nature. There is no quicker way to nullify a keying system than have it oriented around existing people. In the presentation, be prepared to explain and recommend some of the many options available in keying systems such as visual key control, interchangeable or removable core cylinders, and construction keying. It is your obligation to present both the advantages and disadvantages of these options, then let the owner decide those of importance.

Accept Input

Constructive corrections may be offered. After the presentation, listen to the desires of the owner. Remember, the building is his, not yours. Accept and accommodate reasonable suggestions which will make the system workable from an administrative standpoint.

Make a Final Detailed Keying Schedule for the Manufacturer

Reduce information developed during the planning sessions to a final door by door keying schedule for the use of the lock manufacturer. The keying engineers at the lock company should review the schedule to assure its practicality. Include all references and registry numbers of any existing keying if the project includes extension to a system which is in existence. This is particularly necessary if previous orders placed with the manufacturer used different group or keying designations from the schedule currently being prepared.

If the initial order had, for example, a key group AB15, make sure that your addition does not use the same designation unless you wish it to be keyed alike. The same would apply to grand master (A, B, C, etc.) or master (AA, BB, CC, etc.) designations.

Use the uniform keying designations in this manual. All major lock companies are familiar with them and understanding by everybody involved in the supply of locks, cylinders, and keys will be greatly improved as a result.

Requirements should provide for the building or buildings presently proposed and also take care of any future building additions which might be contemplated by the owner.

Complete the Schematic Diagram

Prepare a final schematic chart of the keying system after it has been accepted by the hardware manufacturer. This chart should be turned over to the owner's representative at the time of possession of the building(s) so it can be retained in the files. This amounts to a blue print of the keying system for future reference if additions or changes are to be made.

Whether a key system is modest or large, simple or intricate, added to or not, the ultimate control and responsibility is finally and irrevocably determined by the user. The owner or user should understand clearly from the initial concept to the final acceptance of the keys what the system will accomplish, and that keys should be under complete control of responsible personnel.

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CHAPTER 2

SYSTEM THEORY
BASIC LEVELS OF CONTROL

The establishment of the proper level of control for key systems is extremely important. Only when this level has been determined, are you ready to lay out a system. One of the main reasons many key systems disintegrate is they were not planned at the proper level in the beginning.

Figure 2a illustrates the maximum number of levels the majority of projects will require. Succeeding pages will illustrate the development of these levels.

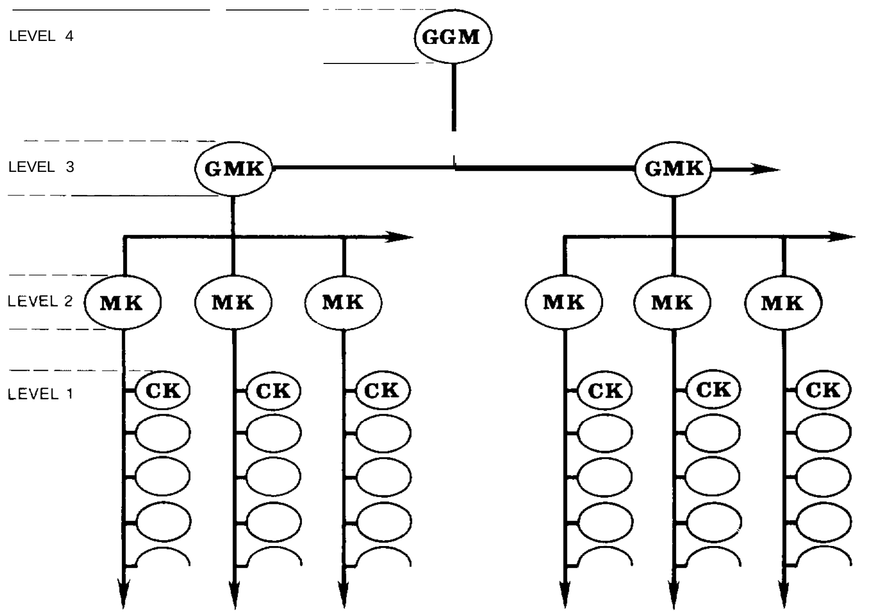


Figure 2a

Level One

No Master Key
Cylinders are operated by individual keys only, keyed different, or keyed alike as required.

Examples: Homes, small stores.

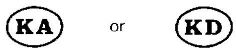


Figure 2b

Level Two

Master Key
Cylinders are operated by a change key and a master key.

Examples: Elementary schools, apartments, industrial buildings.

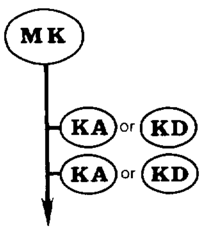


Figure 2c

Level Three

Grand Master Key
Cylinders are operated by a change key, a master key and a grand master key.

Examples: Office buildings, large schools, hospitals.

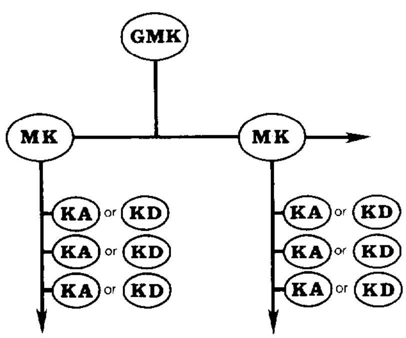


Figure 2d

Level Four

Great Grand Master Key
Cylinders operated by a change key, a master key, a grand master key and a great grand master key.

Examples: Very large hospitals, universities, large government complexes.

Note: In extremely rare instances, large systems may require 5 or more levels. Because these systems are rare, they will not be discussed in this book. Contact your lock manufacturer for assistance if a level five system is required.

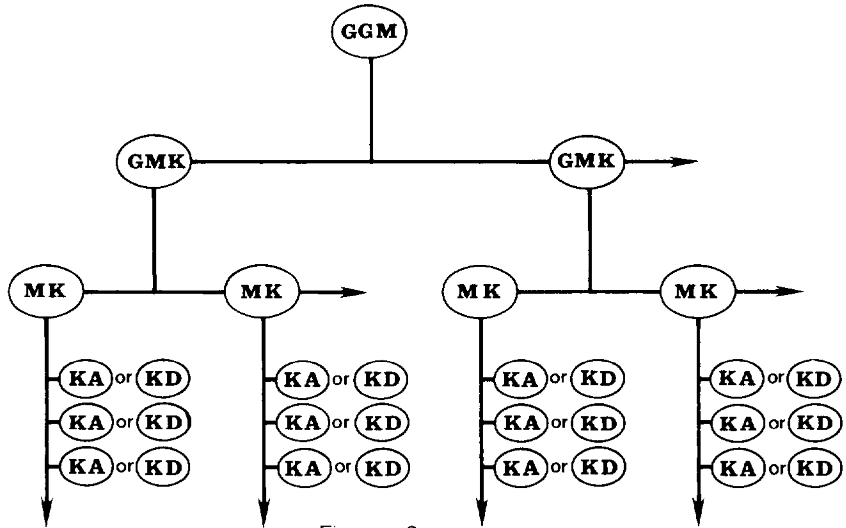


Figure 2e

KEY AND CYLINDER CODING SYSTEM

Keys:
Key symbols using this nomemclature system automatically indicate the function of each key in the system without requiring any further explanation.

Cylinders:
When applied to the cylinder, the symbol will indicate which keys will operate that cylinder, usually without further explanation. An exception is when the cylinder is cross keyed. Cross keying will be discussed later. All cylinders with the same symbol are keyed alike.

LETTERS = MASTER KEYING
NUMBERS = CHANGES

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CHAPTER 3

LEVEL 1 SYSTEM (NO MASTER KEY)

No Master Key. Cylinders can be keyed different or keyed alike as required. All cylinders with same identification are keyed alike.

(KD1)

(KD2)

(KD3)

Figure 3a

It is also permissible to use the terms KA or KD for keyed alike or keyed different. Be aware that a problem might arise if you have KD1 and then want another cylinder keyed the same. It will be necessary to go back and change the KD to a KA set.

The use of the terms, Set 1, Set 2, Set 3, etc. is also permissable.

KA1 - Doors 123, 127, 218
KD - Door 125
KA2 - Doors 129, 208

Either is acceptable. Schedule must have description to explain.

Set 1 - Doors 123, 127, 218
Set 2 - Door 125
Set 3 - doors 129, 208

Alternate method used by some lock manufacturers.

Figure 3b

TYPICAL SCHEDULE FOR LEVEL 1

Door	From/To	Hdwe Set	Key Set	Optional Key Set	Remarks
1	Exit/Living Room	1	1	KA1	
2	Ext/Kitchen	1	1	KA1	
3	Garage/Kitchen	2	1	KA1	
4	Den/Gun Closet	3	2	KD	Security Door

Figure 3c

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CHAPTER 4

LEVEL 2
(SINGLE MASTER KEY SYSTEM)

The master key symbol consists of two letters (AA). The change numbers come first. If there is more than one master key system, not connected in any way, the master key symbols could be made up of different sets of two letters (AB, AC, etc.) for convenience in distinguishing between the different systems.

Example: The first system has a master key with 100 changes. Order cylinders keyed to 1AA through 100AA and the master key is AA.
The second system, completely separate from the first, requires a master key with 50 changes. Order cylinders 1AB through 50AB and the master key is AB.

Numbers before letters in a single master key system.

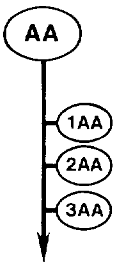


Figure 4a

In a single master key system, prefix the change number.

1	AA
change	master
number	key

EXCEPTIONS TO SINGLE MASTER KEYED SYSTEM

Omitting a Level of Keying

Single keyed (omitting the master key)

Used for locks that are keyed different or keyed alike, but not operated by the master key.

Examples: Food storage rooms
Narcotics cabinets

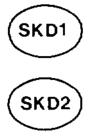


Figure 4b

Cylinder operated by master key only. (Omitting the change key).

A cylinder operated by the master key only (no change keys), use the master key symbol alone.

Example: AA
Cylinder not master keyed but same change key as another cylinder that is master keyed. (Omitting the master key). Use the symbol of the other cylinder but add NMK (no master key) after the symbol.

Example: 1AA (NMK)

Cross Keyed Cylinders
(Use Symbol X)

The cross key symbol "X" is used when more than one key of the same level is to operate an individual cylinder. "X" requires a written explanation of the cross keying situation. Note: Symbol "X" applies to cylinder only, not to keys.
When an individual change key is required for the cylinder: Prefix "X" to the symbol for the cylinder.
Example: X1AA
Describe what other key or keys will also operate the cylinder.
Example: X1AA operated by 1AA, 2AA, AA.
In this example, cylinder X1AA will be operated by its own change key 1AA, master key AA and also change key 2AA.*
Example: X5AA operated by 5AA, 6AA, 7AA, 10AA, AA. In this example, cylinder X5AA will be operated by it's own change key 5AA, master key AA, and also change keys 6AA, 7AA, and 10AA.*
*Some Manufacturers: X1AA operated by 2AA. Since 1AA and AA are already included in the symbol, it is not necessary to list them again but it is best to list ALL keys to avoid confusion.

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Keep in mind! Crosskeying should not be altered or added to an existing system. Crosskeying sets are determined first and other keys that will operate the cylinder are eliminated when the system is established. Any alterations at a later time may allow other existing keys to operate the cylinder.

When an individual change key is not required, the cylinder is considered "special" and is designated by a number with X's on both sides. A full explanation is then required.

Example: X1X, *X2X,* etc.
XIX to be operated by 1AA,2AA, AA. In this example, cylinder X1X will be operated by change keys 1AA and 2AA, and master key AA. No change keys will be issued with cylinder XIX.

Maison Keying

A specific kind of cross keying where a cylinder is operated by all (or a large number of) keys. There is very little security in a maison keyed cylinder.

TYPICAL KEY SCHEDULE FOR LEVEL 2 SYSTEM

Door	From/To	Hdwe Set	Kev Set	Remarks
1	Ext/Vestibule	1	XIX	Operated by 1AA thru 10AA, A A
2	Corr/Apt. 1	2	1AA	
3	Corr/Apt.2	2	2AA	
12	Corr/Janitor	6	10AA	
15	Ext/Trash Bin	11	X12AA	Operated by 1 OAA, 12AA,AA
16	Corr/High Voltage Room	12	SKD1	
17	Janitor/Personal Locker	15	1 OAA (NMK)	

Figure 4c

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CHAPTER 5

LEVEL 3
(GRAND MASTER KEY SYSTEM)

The grand master key is assigned one letter (A). The master keys under the grand master are assigned two letters, the first of which is the same as the grand master.

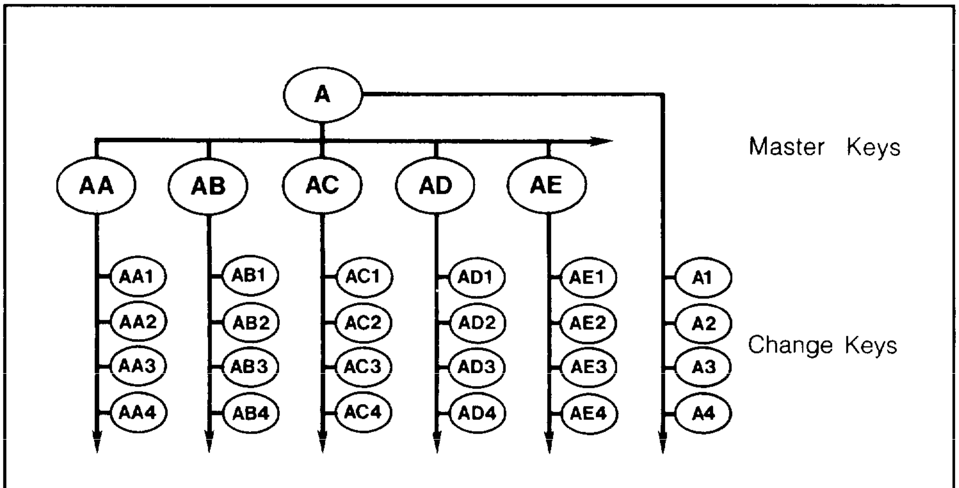


Figure 5a

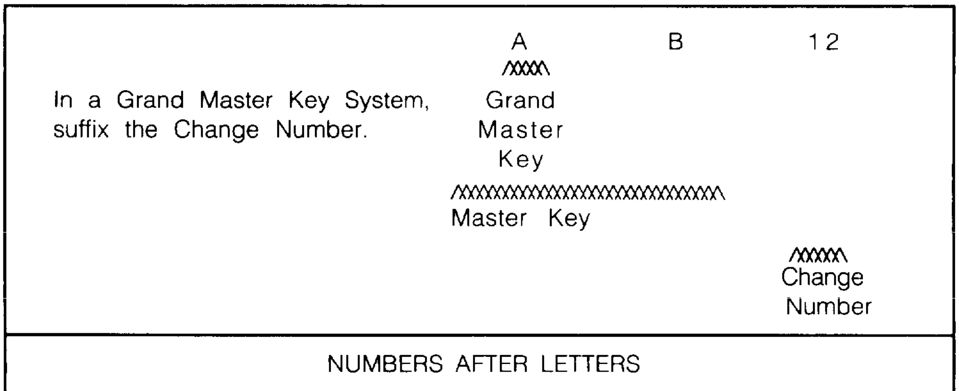


Figure 5b

EXCEPTIONS TO GRAND MASTER KEY SYSTEMS:

Omitting One or More Levels:

Single keyed: (omitting the master and grand master)

Used for locks that are keyed different or keyed alike but not operated by the master key or grand master key.

Examples:
Food storage rooms
Narcotics cabinets

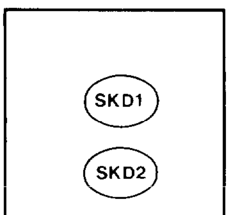


Figure 5c

Cylinder operated by a change key and the Grand Master key (omitting the master key).

Use Grand Master key plus change number.
Example: A1, A2, etc.

Cylinder operated by change key and a master key (omitting grand master key).

Prefix change number as in a level 2 master key system.
Example: 1AA, 2AA, etc.

Cylinder operated by Grand Master key only (omitting change and master key).

Use Grand Master Key symbol only.
Example: A

Cylinder operated by Grand Master & Master keys only (omit change key).

Use Master Key Symbol.
Example: AA

Cylinder keyed alike to another cylinder except master key is not to work in this cylinder.

Use same cylinder nomenclature except add NMK (No master key).
Example: AA1 (NMK)

Cross Keying:

Same as for level 2 master key systems.

More Than 23* Master Keys Under 1 Grand Master Key

*The letters I, O, & Q generally are not used because they can be misinterpreted as numerals.

When a System requires more masters beyond AZ, a number is inserted between the letters to indicate how many times through the alphabet.

Example: A2A, A2B, A2C....A2Z, A3A, A3B...A3Z.

Leading Zero's

Many distributors and manufacturers use data processing equipment which requires a specific number of spaces for each key or cylinder designation. It is permissable to add leading zero's to the keyset or cylinder designation when required. For example: AA001, AB046, 001AA.

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CHAPTER 6

LEVEL 4
(GREAT GRAND MASTER KEY SYSTEM)
Figure 6a

The Great Grand Master Key system is treated like multiple Grand Master Key systems. Each GMK system starts with a different letter (A, B, C, etc). The Great Grand Master Key is assumed to operate all cylinders.

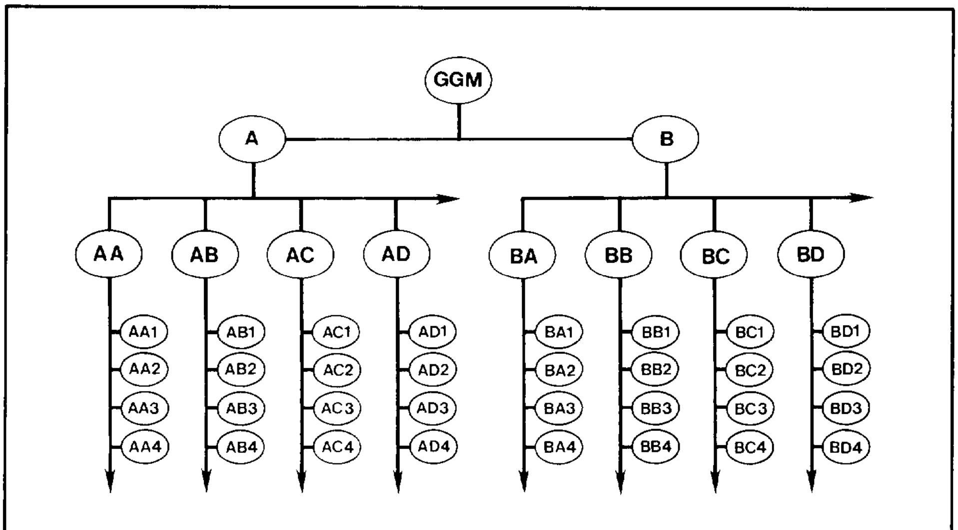


Figure 6a

EXCEPTIONS TO GREAT GRAND MASTER KEY SYSTEMS

All exceptions that apply to a GMK system also apply to a GGMK system. Cylinders keyed to the GGMK only, use GGM.

Example: GGM

Cylinders keyed to a change key and the GGMK (No MK, No GMK), use GGM and the change number.

Example: GGM1, GGM2

Cylinders keyed to a change key and a GMK (no GGM, no MK), Prefix number and use single letter.

Example: 1A, 2A, 1B, 2B

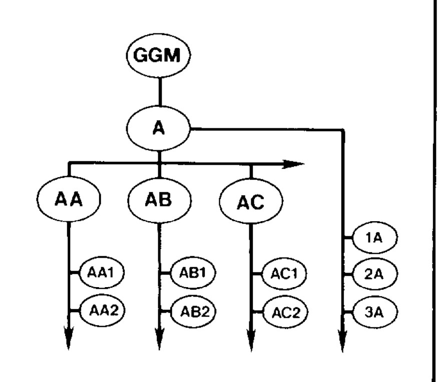


Figure 6b

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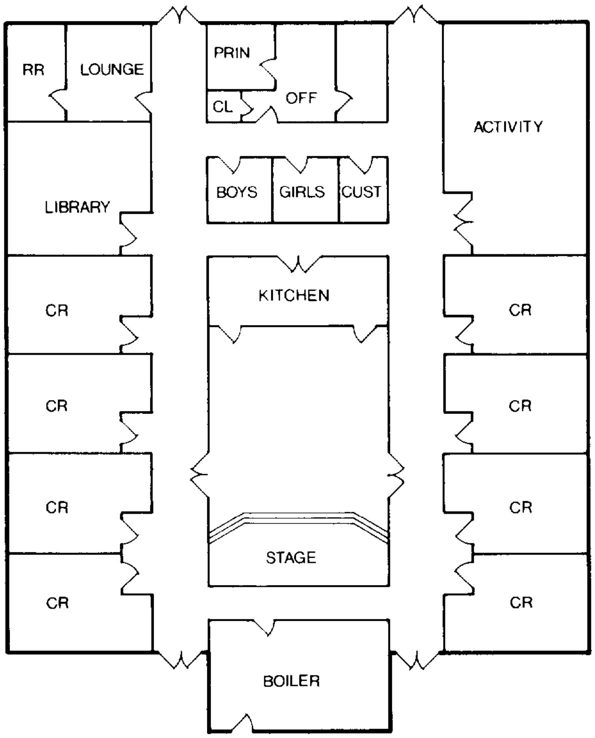
CHAPTER 7

SCHOOL KEY SYSTEM GUIDELINES

Establish the Level of Keying

Schools are unique in that they are usually part of a large GGMK system under the control of a central administration. When bidding a school project, it is extremely important to verify if a restricted keyway is involved because many manufacturers charge more for their restricted keyways. Schools often will require high security cylinders for their buildings to protect against theft and vandalism.

The grade level of the school should be considered. An elementary school usually does not need more than a master key. A middle or high school will often require only a master key. The most desirable system is simple, secure and convenient. The school shown in figure 7a could be keyed in several different ways.



MASTER KEY (LEVEL 2)

Classrooms and Common Employee Areas	1AA
Principal's Office	AA
Mechanical/Custodial	2AA
Library	3AA
Activity	4AA
Multipurpose Room (Gym, Cafeteria, Auditorium)	5AA
Kitchen	6AA
Office Area	7AA
Exterior Doors	8AA

GRAND MASTER KEY - PART OF A LARGE DISTRICT (LEVEL 3)

Assume Grand Master is A and Master is AG.

All Classrooms and Common Employee Areas	AG1
Principal's Office	AG
Mechanical/Custodial	AG2
Library	AG3
Activity	AG4
Multipurpose Room (Gym, Cafeteria, Auditorium)	AG5
Kitchen	AG6
Office Area	AG7
Exterior Doors	AG8 or A5

Both examples require personnel to carry two keys, the exterior door key and the key for their area of use. Persons carrying the master key will need only the master as it will operate all cylinders if AG8 is used for the exterior doors. The use of A5 (change under the grand) can be used for the exterior doors. If the building needs to be rekeyed for security reasons, only the exterior doors need to be changed to the next available change under the grand with no effect on the rest of the system.

GREAT GRAND MASTER KEY (LEVEL 4)

If a school is a larger high school, and a district key (GGMK) is used, then: (Assume GM-B, M-BC)

Exterior Doors	B1	(change under the GMK)
Principal's Office	BC	
Office Area	BC1	
Teachers' Lounge, Workroom, Faculty Restrooms	B1	(change under the GMK)
Mechanical/Custodial	BC2	
Kitchen	BC2	
Math Dept.	BC3	
English Dept.	BC4	
Fine Arts Dept.	BC5	
History/Social Studies	BC6	
Science Dept.	BC7	
Physical Education (Boys)	BC8	
Physical Education (Girls)	BC9	
Art Dept.	BC10	
Music Dept.	BC11	
Drivers Education	BC12	
Business Dept.	BC13	
Kitchen Dry Food Storage	SKD1	(single keyed different)
Outside Gym door for community	SKD2	(single keyed different)
Pool	BC14	
Wood Shop	BC15	
Welding Shop	BC16	
Building Trades Shop	BC17	
Auto Shop	BC18	
Graphic Arts (Print Shop)	BC19	
Gym Doors	X1X, OB, BC8, BC9, BC, B, GGM	

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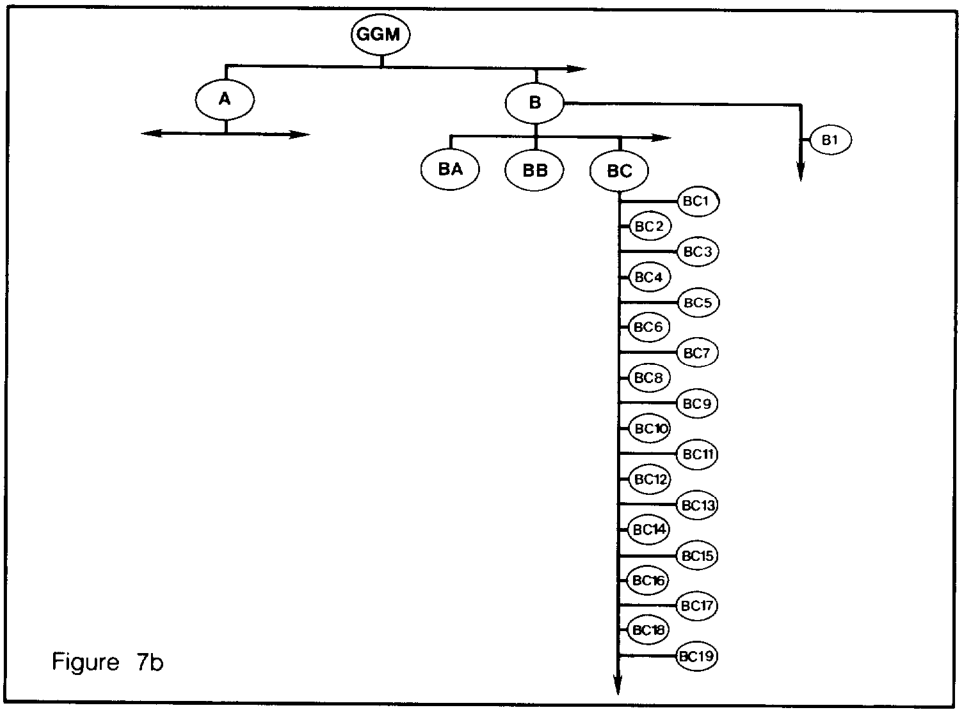


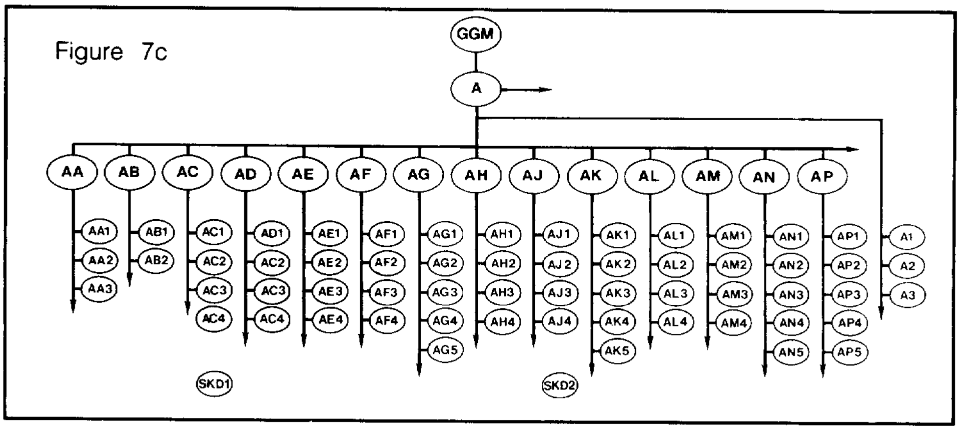
Figure 7b

If the system allows a GMK to be used at the same school, the system shown in the schematic drawing (Figure 7c) could be used. (Assume GM-A)

Several things are apparent in this schematic drawing.

1. All persons except those carrying the GMK will require two keys, the Al (exterior doors) and the key for their area of use.
2. The system is more complex and there is a possibility that the administration could lose control if they are not properly educated by the Hardware Consultant.
3. Crosskeying was used in the admin office area as a convenience to the users of that area. Security has been reduced in those cylinders. An explanation of the crosskeying was included and completely explained to avoid any confusion.
4. Supplying the end users with a schematic drawing can simplify the under standing of the system.

Figure 7c



All Locks	A
Exterior Doors, Restrooms, Lounge, Workroom	A 1
Principals Office	A A
Office Entry	A A 1
Office Storage	A A 2
Copy Machine Room	A A 3
Telephone Closets	A 2
Electrical Closets	A 3
Custodians Office	AB 1
Custodial Closets, Outdoor Storage	AB 2
Food Service Entry	AC 1
Kitchen Office	AC
Freezer	AC 2
Kitchen Equipment Storage	AC 3
Serving Line Doors	AC 4
Math Classroom 15	AD 1
Math Classroom 17	AD 2
Math Classroom 18	AD 3
Math Classroom 19	AD 4
English Classroom 16	AE 1
English Classroom 14	AE 2
English Classroom 13	AE 3
English Classroom 12	AE 4
Stage Doors	AF 1
Fine Arts Office	AF
Dressing Rooms	AF 2
Prop Storage	AF 3
Control Booth	AF 4
Social Studies Classroom 10	AG 1
Social Studies Classroom 11	AG 2
History Classroom 22	AG 3
History Classroom 23	AG 4
History Classroom 24	AG 5
Science Lab	AH 1
Science Classrooms 25/26/27	AH 2
Science Material Storage	AH
Science Office	AH
Science Greenhouse	AH 3
Physics Lab	AH 4
Gym Doors, Pool Doors	A J 1
Girls P.E.	A J 2
Boys P.E.	A J 3
P.E. Storage	X 1 X
(To be operated by: AJ2, AJ3, AJ, A, GGM)	
Boys Varsity Sports Storage	A J 4
Art Classroom 29	AK 1
Art Classroom 30	AK 2
Art Supply Storage	X 2 X
(To be operated by AK1, AK2, `AK, A, GGM)	
Kiln Room	AK 3
Art Office	AK
Art Classroom 31	AK 4
Art Classroom 32	AK 5
Band Room	AL 1
Instrument Storage	AL 2
Band Office	AL
Choral Music	AL 3
Sheet Music Storage	AL 4
Choral Music Office	AL
Drivers Ed. Classroom	AM 1
Drivers Ed. Simulators	AM 2
Drivers Ed. Storage	AM 3
Garage	AM 4
Business Classroom 41	AN 1
Business Classroom 42	AN 2
Typing Classroom	AN 3
Business Storage	AN 4
Computer Classroom	AN 5
Wood Shop	AP 1
Welding Shop	AP 2
Building Trades Shop	AP 3
Auto Shop	AP 4
Graphic Arts Shop	AP 5
Kitchen Dry Foods Storage	SKD 1
Chlorine Storage	SKD 2

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CHAPTER 8

HOSPITAL KEY SYSTEM GUIDELINES

Explanation of Visual Chart

This keying is designed for an average hospital using a Grand Master Key system with four control areas, each having its own Masterkey.

Engineers and Housekeepers Keys

Operating in all four areas are the Engineers key and the Housekeeping key as shown directly under the Grand Masterkey. Incorporating these keys at this point avoids the necessity of cross keying, e.g. XAA10 to Operate AA10, AA1, AA6, AA, A.

Mechanical Area Keys

Key alike in sets all janitor closets, telephone equipment areas, electrical equipments areas, and elevator equipment areas. This limits the usage of the two powerful Engineers and Housekeeping keys. In areas where it is not desirable for the Engineer's key or the housekeeper's key to operate, this should be spelled out in the keying schedule, e.g. A, AA and AA1 only.

Security Area Keys

Grand Masterkey A operates all cylinders in the system except for SKD1 (Narcotics) and SKD2 (Food Storage.) In some areas of a hospital, it is mandatory that only one person be responsible and accountable for the locked items.

Figure 8 shows the symbol SKD1 (Narcotics) and SKD2 (Food Storage). SKD indicates "single keyed different". There can be other locks in a hospital that should be keyed in this manner. The physical number of keys to be furnished for each SKD lock or group of locks must be indicated on the keying schedule and instructions to the lock manufacturer. The SKD symbol eliminates all other keys up to and including the Great Grand Masterkey.

Omitting the Master Key

Al and A2 are operated only by Al and A2 respectively and Grand Masterkey A. The intent here is to bypass any master key because:

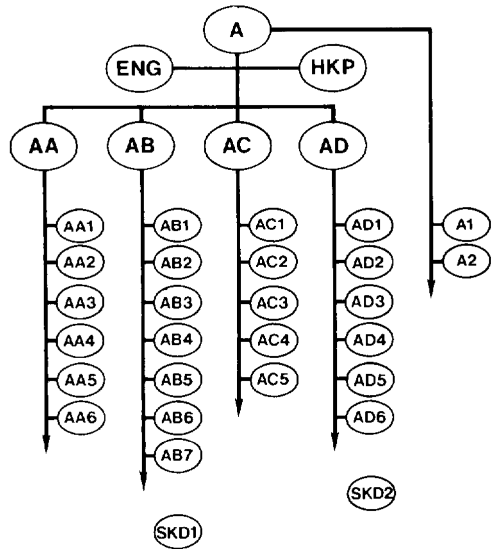
1. The Gift Shop is leased to an outside vendor and only under most unusual circumstances would anyone but that vendor have access. (At the owner's direction, the Gift/Retail Area may also be placed under a completely separate Masterkey which is not part of the GGM system. This would constitute a new simple Masterkey system.)

2. It is assumed the Administrator wants a higher degree of privacy for his or her office.

Master Key Groups

Grand Masterkey A, Masterkey AA and change keys AA1 through AA6 operate cylinders within the Med./Surgical area. Grand Masterkey A, Masterkey AB and the listed change keys (except SKD1) operate cylinders within the clinical area and so on.

Figure 8



All Locks	A
Engineers Key	ENG
Housekeepers Key	HKP
Medical/Surgical	AA
Surgery	AA1
Radiology	AA2
Laboratory	AA3
Morgue	AA4
Emergency	AA5
Out-patient	AA 6
Clinical	AB
Nursing	AB1
Physical Therapy	AB2
Occupational Therapy	AB3
Dietician	AB4
Pharmacy	AB5
Intensive Care	AB6
Volunteers	AB7
Administration	AC
Admitting	AC1
Records	AC2
Accounting	AC3
Purchasing	AC4
Personnel	AC5
Material Services	AD
Receiving	AD1
Central Supply	AD2
Flamable Storage	AD3
Central Storage	AD4
Laundry	AD5
Maintenance	AD6
Narcotics	SKD1
Food Storage	SKD2
Administrator	A l
Gift Shop	A 2

Key Control

With a key system of this size, it is essential that a good key control system be supplied and properly set up in the administrative offices. A satellite system should also be installed in the engineer's office for storage of original keys (for making duplicate keys) and issuance of "loaner" keys to telephone company and other service personnel. Ideally, the key control systems will be set up (keys tagged, indexed, and hung in the cabinet) by the hardware supplier and at least one hospital staff member. When done in this manner, the staff member becomes familiar with the operation of the key control system, and also is impressed with the importance of maintaining the system.

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CHAPTER 9

HOTEL KEY SYSTEM GUIDELINES

Hotels have a large quantity of cylinders, which can be confusing. However, when the building is broken down to areas of use, it becomes simple. All hotels have rooms or suites, exterior doors, housekeeping areas, administrations areas and mechanical/custodial spaces. Most hotels also have meeting rooms, banquet rooms, game rooms, gift shops, exercise rooms, pools and parking lots. While almost like a small city, the hotel can be easy to key.

A few things that are unique to a hotel key system:

Hotel lock functions are different in that the outside knob is always rigid and the actual functioning of the lock is controlled by the cylinder. Most manufacturers use a cylinder that can operate with two different length key blanks. The regular blank will not operate (rotate) the cylinder far enough to operate the dead bolt. A longer key blank will remove the obstacle and permit the cylinder to rotate 360 degrees. The 360 degree rotation of the cylinder will allow the deadbolt to be thrown or retracted. With this type of lock, you can have:

Room Key- A change key assigned to operate one guest room. This key is cut on the regular blank.

Display *Key* - Same as the room key but cut on a longer blank so that the deadbolt can be operated from the outside of the lock. The name "Display" came from the old traveling salesmen that wanted to lock their "displays" in their room.

Grand Master Key - This key is cut on the regular blank and will operate all locks in the system, but will not operate the deadbolts of the Guest rooms.

Engineers *Key* - Same as the Grand Master Key except operates selected locks for Engineers staff.

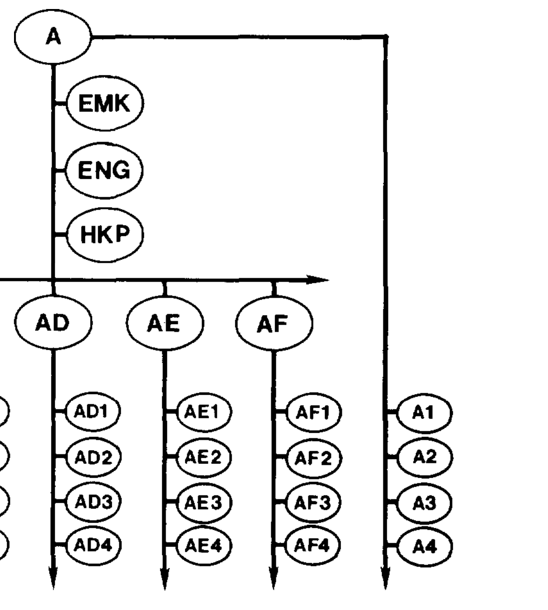
Housekeeping *Key* - Same as the Grand Master Key except operates selected locks for housekeeping staff.

Emergency Key - Same as the Grand Master Key but cut on the longer key blank to allow the deadbolt to be thrown to "lock out" a guest or to retract the deadbolt to enter a room in case of an emergency.

Cylinders are sometimes moved from one floor to another to add a small amount of security when room keys are lost or not returned by guests when checking out. All cylinders covered by one master must be moved so the maid's master will still operate.

In the application shown in figure 9, the maid must carry two keys. One key is the master for the floor she is assigned to and the other is the key A3 which opens the linen rooms Key A3 is also used by the laundry to stock the linen rooms. This is a good example of designing a key system for the building and not for the people.

Figure 9



All Locks	A
Emergency Key (Room Locks Only)	EMK
Engineering Key	ENG
Houskeeping Key	HKP
Gift Shop	A1
Exterior Doors	A2
Linen Rooms	A3
Pool	A4
Administrative Offices	AA
Doors KA or KD as necessary	AA1 through AA-
Banquet Rooms	AB
Doors KA or KD as necessary	AB1 through AB-
Kitchen/Restaurant	AC
Doors KA or KD as necessary	AC1 through AC-
Mech/Custodial	AD
Doors KA or KD as necessary	AD1 through AD-
Second Floor Master	AE
Guest Rooms KD	AE1 through AE-
Third Floor Master	AF
Guest Rooms KD	AF1 through AF-

Entrance Door Keying

Sometimes the entrance doors have a sign "Use room key to open door". This is maximum uncontrolled cross-keying and absolute minimum security, Uncontrolled crosskeying is when more than one change key from different masters operate one cylinder. The room keys come from different floors and each floor has a different master key. Hotels have the mistaken idea that there is more security because a room key is required to enter the building after hours.

There are three ways to key the cylinder for all room keys to operate it.

1. Only one or two bottom pins are used in the cylinder and they are common to all masters and change keys
2. The cylinder is pinned in such a way that all pin chambers have #1 and #2 bottom pins and #2 master pins stacked up in the chambers, allowing all keys to operate the cylinder.
3. There are no pins, drivers, master splits or springs in the cylinder at all which means that any object can rotate the cylinder and operate the lock.

The hardware consultant must educate the user about "Security vs Convenience". It is better to require a guest to enter the main entry after hours where desk and security personnel are on duty. Recreation rooms (Exercise, game, pool, etc.) should be locked after hours to prevent their use. The hardware consultant should offer options to the user. If the user decides that they want the so-called Security cylinders, then simply list the proper nomenclature, Ie., xAA35 to be operated by: ALL KEYS.

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CHAPTER **10**
OFFICE BUILDING KEY **SYSTEM GUIDELINES**

Office buildings come in many different shapes and sizes and there are many key systems to accommodate them. Trying to describe all of the possibilities is impractical, so two of the most common will be discussed, a small office complex and a large office tower. The key system for any building in between can be tailored to fit using the information given in this chapter.

Small Office Building

By keeping the key system simple, yet secure, a small office complex can be done with a simple master key. When each rental office has a door that opens directly to the outside, then each office can be assigned a change key. Each mechanical/custodial area can be keyed to the master only (AA).

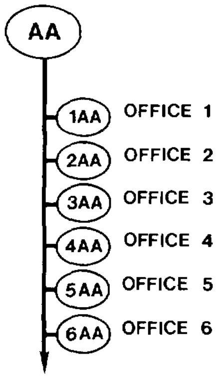


Figure 10a

Large Office Building

In a large office tower there are many more considerations. All individual rental offices cannot have an exterior door. Therefore entry must be through a common area. The building may be controlled by a rental manager or maintenance personnel. They will lock or unlock the building as necessary. But, after hours entry must then be considered. Locked restrooms common to different office spaces should be considered.

Each office is assigned a master and doors within each space KA or KD as necessary. Changes under the Grand are commonly used, but require the use of more than two keys by personnel. For example, the first tenant office can carry either a master key (AA) and exterior key (A4) or carry the entry key (AA1) and the key to their own office and the exterior key (A4). A restroom key is issued to each office for use by all personnel when needed.

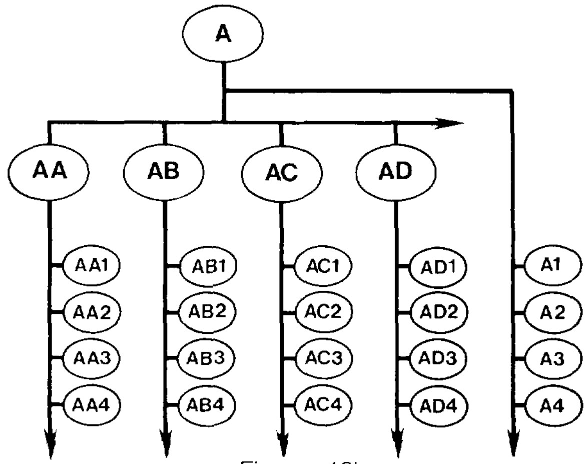


Figure 10b

All Locks	A
Telephone Closets	A I
Mech/Custodial	A 2
All Restrooms	A 3
All Core Exterior Doors	A 4
ABC Co.	A A
Doors KA or KD as necessary	AA1 through AA-
DEF Co.	AB
Doors KA or KD as necessary	AB1 through AB-
GHI Co.	AC
Doors KA or KD as necessary	AC1 through AC
JKL Co.	AD
Doors KA or KD as necessary	AD1 through AD-
MNO Co.	AE
Doors KA of KD as necessary	AEI through AE-

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CHAPTER **11**

MULTIPLEX KEY SYSTEMS

Most lock manufacturers offer multi-keyway or multiplex systems. They are simply different but interchangeable key broachings and key millings. Key broaching is the shape of the section cut into the cylinder plug and key milling is the identical millings made on a key blank so the key will enter the plug. Key millings can be cut in such a way that they can be milled to enter even more plugs than those above.

Normally a GMK system is designed and the identical bittings are used for each plug braoching. Since the keys are not interchangeable at the first level there is no concern for loss of security. An example would be, using the chart above, Keyset AB5 of keyway C would have the same cuts on the key as key set AB5 of keyway D but the two keys cannot interchange with each other's plug so there is no loss of security. Extending even further, the second level of key blanks are used to cut the GGMK's. Keep in mind that the cuts on the GMK, GGMK, and GGGMK are identical but are controlled by the broaching and milling.

This type of system is used on very large complexes such as school districts, universities, government installations, city complexes, etc.

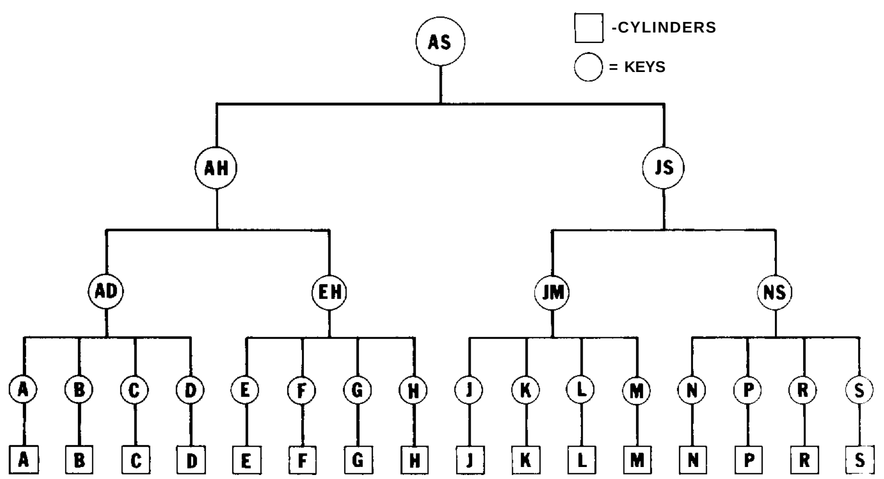


Figure 11

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CHAPTER 12

KEY CONTROL SYSTEMS

A key control system is defined as a simple, efficient and systematic method for filing and controlling keys, A system consists of a cabinet for storing keys and a record system for information about the keys and to whom the keys have been issued.

Every key system, no matter how large or small, should have a key control system. Many times the key control system is overlooked and the user receives a box of keys. It is usually easier and more expedient simply to issue master keys to everyone and the security of the system is destroyed.

The key control system offers many advantages to the user:

Convenience
- Keys are readily available when needed.
- *File keys are always available for making accurate duplicates.

Security
- •Keys are a form of access control. The basic premise of access control is to allow or deny entry depending on the fulfillment of certain qualifications. Control of the keys is a vital part of the security of the system.

Visible Key
- *Accurate record of keys issued.

Records
- *Written record of keys and the cylinders they operate.

Lock Insurance
- *Use of file keys for making duplicates reduces wear of the lock by inaccurate duplicate keys.

PLANNING A KEY CONTROL SYSTEM

1. Survey of the requirements. Use a checklist as a reminder to include all locks. (Refer to Figure 12a, following page.)

2. Determine type of system.
   *Single cabinet central system.
   *Multi-cabinet auxiliary systems

3. Determine number of hooks required for each cabinet.
   *Use the checklist.
   ● AIIOW for future expansion.

4. Select the type of cabinet(s).
   *Wall mounted (surface or recessed?)
   *For existing desk or file drawers
   *File cabinets.
   *Portable cabinets.
   *Cabinets for rings of keys.

5. Select any optional features for the cabinets.
   *Special colors.
   *Dual compartments.
   •Dual custody (two different locks)
   *Combination locks.
   •Panels to accommodate hotel/motel key tags.
   *Panels to accommodate large head keys.
   *Panels to accommodate prison keys.
   *Cabinets to hold padlocks.
   *Panels to hold interchangeable cores.

6. Select type of records system
   *Computer or manual system.
   *Standard 3-way cross index or single index.)
   (3-way cross index consists of hook numerical, key numerical and alphabetical indexes.)
   *Permanent or temporary key receipt system.

7. Select optional records.
   *Cylinder index.
   *Key requisition form.
   •Key deposit record form.

8. Determine who will be responsible for setting up the system.
   *Manufacturer of system.
   *Distributor.
   *User.

TIPS FOR SETTING UP SYSTEMS

1. When describing rooms or doors, use the nomenclature that will be used by the user. For example, the plans may say “Natatorium” but users will call it a “Pool”.

2. Leave room for expansion on the cross reference indexes. Don’t crowd.

3. Don’t try to match hook numbers with room or key numbers.

4. Don’t put master keys on the first or last hooks. Place them inconspicuously in the middle of the cabinet.

5. Make sure the key gathering envelopes have all the description properly filled out.

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Lock and Key Survey

Date ______
Department ______
Total Locks ______
By ______

If you are in the field of BUSINESS ADMINISTRATION, EDUCATION, or HOSPITAL ADMINISTRATION you may want to find out how many locks and keys you should CONTROL by distributing these survey sheets to department heads.

Items with Locks	Number of Locks	Items with Locks	Number of Locks	Items with Locks	Number of Locks
Access Space		Doors (Exterior)		Mail Bags	
Air Conditioning		Entrance		Mail Boxes	
Alarms		Exit		Money Bags	
Athletic Supplies					
Automotive				Penthouse	
		Doors (Interior)		Plan Case	
		Cafeteria			
Blood Bank		Classroom			
Book Cases		Closet		Refrigerators	
Bulletin Boards		Connecting		Rolling Grills	
		Elevator		Roof Vents	
		Elevator Corridor			
Cabinets		Entrance			
Electric		Fan Room		Safe Compartments	
Filing		Fire		Safe Deposit Boxes	
Instrument		Garage		Screens	
Key		Office		Stop Sink Closet	
Kitchen		Storage Room		Switch Key	
Medicine					
Narcotics					
Storage				Tabernacle	
Supply		Drawers		Tanks (Oil & Gas)	
Suture		Bench		Thermostat	
Tool		Cash		Trailers	
Wardrobe		Drafting Room		Trap Doors	
		Lab. Table		Trucks	
Camera Cases		Safe		Trunks	
Cash Boxes		Tool			
Cash Registers		Gasoline Pump			
Chute Doors		Gates		Valves	
Clocks				Vaults	
		Lockers			
Dark Rooms		Employee			
Desks		Gym		Watchman's Service Box	
Display Cases		Paint			
		Patients			
Dispensers		Physicians			
Sanitary Napkin		Student		X-Ray	
Soap		Teachers			
Towel		Tool Room			

Figure 12

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CHAPTER 13

MAINTENANCE OF KEY SYSTEMS

While our consideration up to this point has been with the establishment of a Master Key System, we also feel the maintenance of that system, once it becomes a reality, is of equal importance. If proper procedures are not followed in extending the system, it will not provide the security or expansion originally planned and soon will be ignored or discarded. It is essential that the following steps be taken if the system is to give the ultimate in these areas:

Responsibility

The owner or user of the master key system must make someone responsible to administer the operation of it and control the use and distribution of keys.

Expansion

Any extensions or additions to the system should normally be supplied by the lock manufacturer originating the system in order to insure the keying continuity and minimize the possibility of key interchange which would destroy the integrity of the system in the hands of the user.

Rekeying

Extensions to the system or rekeying done locally should be by a properly qualified locksmith, and then, only with code information provided by the originating manufacturer to the owner.

Fitting of Cylinders

To insure proper operation, locks and cylinders should be fitted by the lock manufacturer or by a qualified locksmith trained by the manufacturer.

Key Duplication

Keys should never be made by duplicating from another key. They should be cut from code with a code machine.

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CHAPTER 14

THE KEY CONFERENCE

Setting Up the Conference

During the detailing phase of a project, it will be necessary to have a meeting to determine the end user's wishes as to his key system. Most of the time the contract is with the general contractor and he should be notified that you wish to call a meeting to determine the keying. Try to arrange this meeting to include a person who can make the final decisions as to the end user's needs. Quite often the architect is present, along with the contractor, although it is not necessary for either of them to be there. The point is, the fewer the persons in attendance, the smoother running the meeting will be. If too many persons are there, it can lead to a time-consuming and confusing situation. Alert the end user of the meeting well in advance of the date and he/she can obtain the needed information as to his/her different departments as well as to begin to formulate ideas for keying.

Preparing for the Conference

In advance of the meeting you should look over the plans, not in the same sense as you did for detailing, but look at it as an operational building. Check the flow of activity. Look for special areas of security and be aware of weak points in the system. Basically, all hospitals are the same, just as all schools are the same and all office buildings are the same. There are, of course, differences, usually because hospital administrators do vary as do high school principals in their wants and needs for their key systems. Key the building and not the people.

At this point it is advisable to review Chapter 1, *Planning a Key System.* The points made in that chapter will help you to conduct a successful meeting.

During the Meeting

During the meeting you will be hearing all the needs of the end user. Putting those needs into the nomenclature of keying is the job of the hardware consultant. Do not attempt to do this at the meeting as changes will cause more confusion and will require major changes in nomenclature. This can cause delays and disinterest in the meeting. Review the following form (Figure 14a) and understand how it is used. After the meeting, absorb all the information. Then transfer the needs shown on the form to the necessary key nomenclature (Figure 14b).

The Work Sheet

The form (Figure 14a) can be used at the key meeting, then filled out with key symbols after the meeting. Changes can be made and the system can be understood easily by those not familiar with keying nomenclature. The information on the form, when completed, can be transferred easily to the hardware schedule for approval.

To use the form properly, information is listed as the meeting progresses. More than one quarter of the page can be used for the same master, or a whole page or pages, per master. the form is broken down into four change keys per quarter page to aid you in determining Multiples of Four (See Chapter 15).

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CHAPTER 15

KEY SYSTEM LIMITATIONS

This chapter explains how to establish a limit or budget for the keying system. Every key system has a limit. Knowing what the limit is can be very helpful, especially at the key conference. If the user wants a system too large to be accommodated on one keyway, then a multiplex system will be required (see Chapter 12).

Importance of Key Depths

Key system bitting lists are designed using numerical values to represent the root depth of a key. The root depth is the distance from the bottom of the key to the bottom of the key cut. Most manufacturers use a 10 depth system, either 0 thru 9 or 1 thru 10, and one uses a 6 depth system. Since the 10 depth system is the most common, this discussion will center around it and is known as “Multiples of 4”, (A six depth system is “Multiples of 5”).

Mathematical Limitations

When working with 10 depths in a 6 pin cylinder, there is a mathematical limit of combinations available. Ten to the six power combinations are theoretically possible. In reality, much less is available because:

The MACS (Maximum Adjacent Cut Specification), cannot exceed 7 in most cases. The MACS, or the two cuts on a key next to each other, cannot exceed the numerical value of 7. For example; A change key bitting of 236391 cannot be cut on a key blank because the 91 combination is more than 7 in difference. Cutting the 9 will remove the metal where the 1 cut would be.

The difference between each cut in any one pin chamber and the next available cut in that same pin chamber must be at least .025 inches. Using a 0, 1. **2, 3, 4, 5, 6, 7, 8, 9** system (O-9) where the difference between each number is ,015 inches (Fifteen thousandth), you must use every other number to obtain the difference of at least .025 inches. This can be all odd or all even numbers.

Typical O-9 system pin lengths using .015 inches difference.

The difference between each EVEN number is .030

The difference between each ODD number is ,030

Using this chart, only 5 depths are available for use in each pin chamber, all the odd numbers or all the even numbers. This brings us to the next rule

0	=	.200
1	=	.215
2	=	.230
3	=	.245
4	=	.260
5	=	.275
6	=	.290
7	=	.305
8	=	.320
9	=	.335

Figure 15a

In designing a key system the number chosen to be used in the high level key (MK or above) should not be used in the change key bitting unless it is used for all keys. In other words, if the number 6 is in the first position of the bitting, then the number 6 cannot be used in the change keys

	Even #'s		Odd #'s	
MK Number	2		1	
Available Change Key Number	4 6 8 0	4 Numbers	3 5 7 9	4 Numbers

Figure 15b

In the example of even number bitting, the #2 cannot be repeated in the change key bitting. The same applies to the odd bitting.

Using the above rules, there are 4 available numbers in any one pin position.

There are four to the sixth power or 4096 possible combinations.

The above discussion shows that only 4 change keys can come from any one pin chamber before moving on to another pin chamber. Hence the name Multiples of 4.

NUMBER OF CHANGE KEYS

1 pin chamber = 4 change keys

2 pin chambers = 4 x 4 = 16 change keys

3 pin chambers = 4 x 4 x 4 = 64 change keys

4 pin chambers = 4 x 4 x 4 x 4 = 256 keys

5 pin chambers = 4 x 4 x 4 x 4 x 4 = 1024 change keys

6 pin chambers = 4 x 4 x 4 x 4 x 4x 4 = 4096 change keys

NOTE: A Multiples of 5 system uses depths with a difference of .028" which allows the use of each number. One number is used for the upper level keys which leaves 5 numbers for the change keys. Five to the sixth power = 15,625 possible combinations.

SAMPLE BITTING LIST

Figure 15b

HOW TO USE THE MULTIPLES OF 4

At the key conference, the building owner wants a GMK and 18 master keys with one of the masters having 81 change keys. Can it be done? Using the Multiples of 4, one chamber is needed for the GMK, and 3 chambers are needed for the 18 masters (4 x 4 x 4 = 64). 64 masters are available but only 18 will be used. This leaves 2 pin chambers or 4 x 4 = 16. 81 change keys are needed but only 16 are available. Therefore, the system cannot be done. Reducing the number of masters to 16 (4 x 4) will allow 3 chambers to be used for change keys. 4 x 4 x 4 = 64 change keys would be available.

To use the multiples of 4 in practical application simply start with the high level using the chambers needed and proceed to the master key using the necessary chambers to see if there are enough chambers to obtain the needed change keys.

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CHAPTER 16

RECOMMENDED STANDARD DEFINITIONS

TERM	DEFINITION
BICENTRIC CYLINDER	A cylinder having two independent plugs, sometimes with different keyways. Both plugs are operable from the same face of the cylinder. It is designed for use in extensive master key systems or for security applications requiring two different keys.
BITTING	1. The number(s) represent the depths of the key cut(s). 2. The actual cut or combination of a key
BITTING LIST	A listing of the key combinations used within a system.
BOW	The portion of the key used as a grip or handle.
BROACH	1. Noun: A tool used to cut the keyway into the cylinder plug. 2. Verb: To cut the keyway into a cylinder plug with a broach
CAM	A flat actuator attached to the rear of a cylinder and operated by the key.
CHAMBER	A cavity in a cylinder plug or shell which houses the tumbler.
CHANGE KEY	A key operating only one cylinder or one group of keyed alike cylinders in a keying system.
COMBINATION	The group of numbers representing the bitting of a key or the tumblers in a lock or cylinder.
CONSTRUCTION CORE	An interchangeable or removeable core designed for use during the construction phase of a building. The cores are normally keyed alike and, upon completion of construction, they are to be replaced by the permanent system's cores.
CONSTRUCTION KEY	A key to operate designated cylinders for a temporary period during construction.
CONSTRUCTION MASTER KEY	A key normally used for a temporary period during building construction. It may be rendered permanently inoperative without disassembling the cylinder.
CONSTRUCTION MASTER KEYED	A cylinder arranged to be operated temporarily by a construction masterkey.
CONTROL KEY	A key to remove or install an interchangeable or removeable core.
CONTROLLED CROSS KEYING	A condition where two or more different change keys, under the same higher level master key, operate one cylinder by design, e.g., XAA1 operated by AA2.
CROSS KEYING	Combinating a cylinder to two or more different change keys of the same master key. See also "controlled cross keying" and "uncontrolled cross keying".
CYLINDER	A complete operating unit, usually consisting of a plug, shell, tumblers, springs, plug retainer, a cam or tailpiece or other actuating device, and all other necessary operating parts.
DISPLAY KEY	A special change key in a hotel master key system allowing access to one designated guest room, even if the lock is in the shut out mode. It may also act as a shut out key for that room. Name comes from the traveling salesman who wanted to shut out all other keys to protect his "displays" from theft.
DRILL RESISTANCE	Arranging a cylinder plug and housing to resist drilling.
DUAL TAG KEY CONTROL SYSTEM	Same as single tag system except a 2nd permanent tag is used to keep one of each key on file.

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EMERGENCY KEY	1. Key to operate hotel locks having lockout feature blocking entry by other keys. 2. A key operating a privacy function lockset from the outside.
ENGINEER'S KEY	A designated master key used by maintenance personnel to operate selected locks under different master keys in a system using three or more levels of keying. Sometimes called Maintenance Key.
FILE KEY	A key attached to permanent tag in a dual tag key control system
GRAND MASTER KEY	The key operating two or more separate groups of cylinders, each operated by a different master key.
GRAND MASTER KEY SYSTEM	A key system having three levels of keying
GRAND MASTER KEYED	A cylinder which is keyed into a grand master key system
GREAT GRAND MASTER KEY	A key operating two or more separate groups of cylinders, each operated by a different grand master key.
GREAT GRAND MASTER KEY SYSTEM	A key system having four levels of keying
GREAT GRAND MASTER KEYED	A cylinder having keyed into a great grand master key system.
GREAT GREAT	A key operating two or more separate groups of cylinders, each operated by different great grand master keys. Seldom used because of limited number of change keys available.
GREAT GREAT GRAND MASTER KEY SYSTEM	A key system having five or more levels of keying.
HIGH SECURITY CYLINDER	A cylinder offering a greater degree of resistance to picking, impressioning, key duplication or other forms of surreptitious entry.
HIGH SECURITY KEY	A key for a high security cylinder
HOUSEKEEPER'S KEY	A designated master key in a key operating selected resident, linen rooms, and other housekeeping areas (usually several MK's or a GMK).
INDICATOR	A device providing visual evidence that a deadbolt is extended or a lock is in the shut out mode.
INTERCHANGE-ABLE CORE/CYLINDER	A cylinder containing both the upper pin chamber and plug in an intigral unit removeable by a special control key and interchangeable with other cores in the system.
KEY	A properly milled device used to operate a corresponding cylinder.
KEY BLANK	Material manufactured to the size and configuration allowing its entry into the keyway of a specific locking device. A key blank has not yet been cut.
KEY CONTROL	1. Any method or procedure limiting unauthorized acquisition of a key or controlling distribution of authorized keys. keys or both. 2. A systematic organization of keys and key records.
KEY INTERCHANGE	An undesirable condition, where a key unintentionally operates a cylinder or lock
KEY RECORDS	Records including some or all of the following: bitting list, key system schematic, end user, number of keys or cylinders issued, names of persons to whom keys were issued, hardware or keying schedule.
KEY SECTION	The cross sectional configuration of a key blade as viewed from the tip toward the bow.
KEY STORAGE CABINET	Cabinet used to store keys

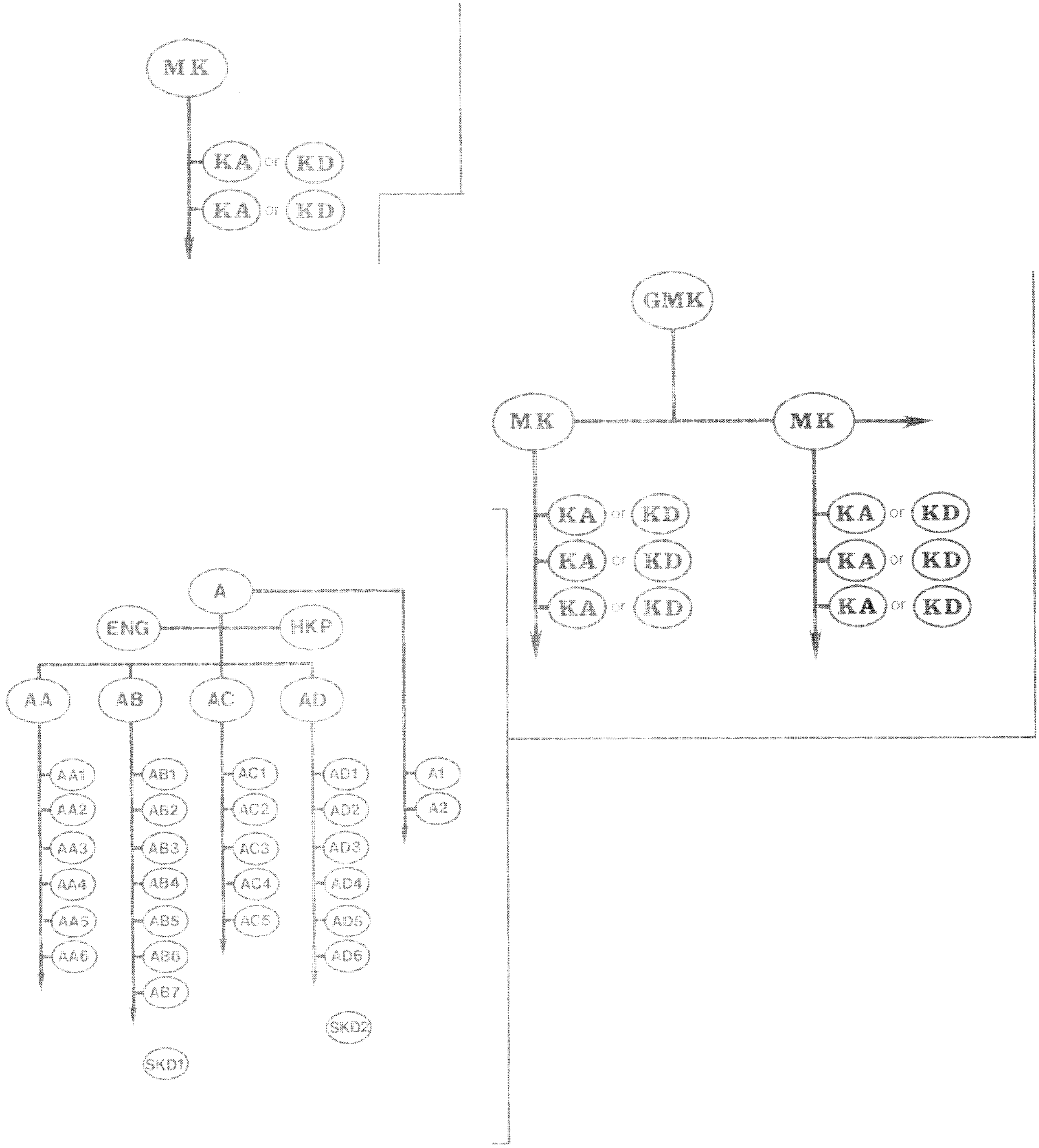
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KEY SYMBOL	A designation used for a key combination in the standard key coding system, e.g., A, AA, AA1, etc.
KEY SYSTEM SCHEMATIC	A visual chart depicting the key system
KEYED	1. Combinated 2 Having provision for operation by key.
KEYED COMMON	See "Maison Key System".
KEYED ALIKE	Two or more cylinders having the same combinations
KEYED DIFFERENT	Two or more cylinders, each combinated differently from the others.
KEYING	Any specification for how a cylinder is, or group of cylinders are, combinated
KEYING CHART	See "Bitting List"
KEYING DIAGRAM	See "Key System Schematic"
KEYING SCHEDULE	A detailed specification of the keying system listing how all cylinders are to be keyed and the quantities, markings, and shipping instructions of all keys or cylinders to be provided.
KEYWAY	Broachings in cylinder plug
LEVELS OF KEYING	The divisions of a key system into hierarchies of access
MAISON KEY SYSTEM	From the french, meaning "house" key system. A key system with one or more cylinders operated by other designated keys in the system; e.g. main entrances of apartment buildings operated by all individual apartment entrance keys (see Crosskeying).
MASTER KEY	1. A key operating all the master keyed locks or cylinders in a group, each lock or cylinder usually operated by its own change key. 2. To combinate a group of locks or cylinders so that each is operated by its own change key as well as by a master key.
MASTER KEY SYSTEM	A key arrangement having two or more levels of keying.
MASTER KEYED	A cylinder or group of cylinders combinated so that all may be operated by their own change key and a master key.
MASTER KEYING	See "Master Key" #2
MULTIPLE KEYWAY	Plugs with a different keyway broaching or key section with higher level keys milled to operate more than one keyway.
MULTI-SECTION KEY BLANK	A key entering more than one key broaching in a multiple keyway system.
PARACENTRIC	1. A keyway with one or more longitudinal ribs on each side projecting toward the vertical center line of the keyway. 2. A key blank made to enter such a keyway is a paracentric key.
PICK	Manipulating the tumblers of the lock so as to operate the cylinder without an authorized key.
PLUG	The part of a cylinder containing the keyway and with tumbler chambers usually corresponding to those in the cylinder body.
PROPRIETARY SYSTEM	A system with a keyway or key section assigned exclusively to one or more end users by the lock manufacturer. It may also be protected by law from duplication.
REMOVABLE CORE/CYLINDER	A cylinder which can be removed from a lock by a key or tool and installed in another lock of the same type.

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RESTRICTED	A keyway and corresponding key blank whose sale or distribution is limited by the lock manufacturer in order to reduce unauthorized key duplication.
SECTIONAL KEY BLANK	See “multisection key blank”
SECTIONAL KEYWAY SYSTEM	See “multiple keyway system”
SHEAR LINE	The location in the cylinder where the tumblers will line up when the proper key is inserted and permit the plug to be actuated.
SHUT OUT KEY	A key making a lock inoperative to all other keys in the system except the emergency master key, display key, and some types of shut out keys, Usually used in hotel keying systems.
SIDE BAR	A secondary locking device in a cylinder. When locked, it extends along the plug beyond its circumference. It must enter gates in the tumblers in order to clear the shell and allow the plug to rotate.
SINGLE TAG KEY CONTROL SYSTEM	A key storage cabinet with control system incorporating one tag for each hook.
SKD	Symbol for “single keyed”. Normally followed by a numerical designation in the standard key coding system, e.g. SKD1, SKD2, etc. It indicates that a cylinder is not operated byanyother key, but is part of the keying system.
SUB MASTER KEYING	Another level of keying used by some manufacturers between level 1 change keys and level 2 master keys. Use of sub master keying is not recommended.
“TO BE OPERATED BY”	Identifying a cylinder to be operated by one or more keys. Never use phrase “to pass” or “subject to”
“TO OPERATE”	Identifying a key or keys to operate cylinders. Never use phrase “to pass” or “subject to”.
UNCONTROLLED CROSS KEYING	A condition in which two or more different keys under different higher level keys operate one cylinder by design; e.g. XAAI, operated by AB, AB1 Note: This condition severly limits the security of the cylinder and the maximum expansion of the system, and often leads to key/interchange
VISUAL KEY CONTROL	The marking of keys and/or cylinders with standard key symbols.

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